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SARCOSPORIDIOSIS IN AN EAST INDIAN *

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Reports of cases of sarcosporidiosis of man are extremely rare. There are probably only two other undoubted cases in the literature: the case reported by Baraban and St. Remy in 1894, and the second reported by me in 1909.¹

The finding of two cases is due probably to a rather persistent search for parasites in a very large postmortem service in the tropics. The infection is probably of little or no pathological importance in man, but as an example of what may be the lodgment of a sporozoon in a biological blind alley it has some interest.

CLINICAL HISTORY

Ali, a mohammedan Malabari, bullock cart driver and estate coolie, 30 years of age. Had come from Ponani, Malabar Coast, British India, two years before his death and had lived in Serembam and Ampang, Federated Malay States, for two years.

He was a patient of the District and General Hospitals, Kuala Lumpur, having been treated for malaria and hookworm infection. He was admitted to our ward¹ in the District Hospital on July 19, 1915, and was under treatment and care until September 28, the day of his death.

He was suffering from severe anemia of a type not uncommon in the Federated Malay States. Subtertian malarial plasmodia were found on admission by Dr. Barber, and he was treated for hookworm by Dr. Hacker and fifty-three hookworms were expelled. The erythrocyte count on the day of admission was 952,000.

His case was of interest to us, for he presented a picture of severe anemia which we believed was due chiefly to longstanding, insufficiently treated malaria. It is unnecessary to go into the details of his clinical course in the ward, for although extremely interesting as an example of untreated malarial cachexia it probably bears no relation to the slight infection by sarcosporidia which was found at the autopsy.

During his life his tongue presented a picture of desquamation and atrophy seen so commonly in the cachectic state following malaria

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1. Malaya Board working under auspices of British Colonial Office and Rockefeller Foundation in Federated Malay States.

that is sometimes called sprue. Monilia were detected in scrapings from the tongue, and his stools were frothy, but there was no invasion of the tissues of the gastro-intestinal tract by monilia. The patient's condition was apathetic, and he gave no evidences of pain or other symptoms referable to the musculatory system.

The postmortem disclosed the changes seen in severe anemia due to malaria, besides other lesions without special interest. The musculature presented no gross evidence of sarcocysts for these were too

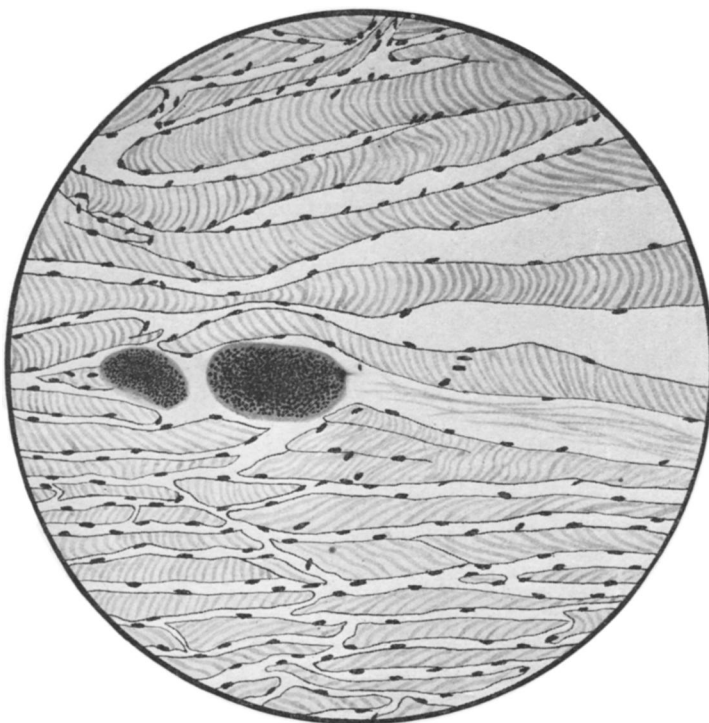


Fig. 1.—Section of muscle, Case 2 "Ali," showing oblique section of muscle and a sarcocyst which through the obliquity of the section appears as two cysts.

small to be recognized by the naked eye. On inspecting the sections of tissues from the mouth, lips and tongue, sarcosporidia were encountered in one out of four blocks from the latter.

DESCRIPTION OF THE SARCOSPORIDIA

The section presented an elongated stippled body faintly encapsulated. The sarcocyst was not definitely imbedded in a muscle fiber, although lying parallel to the fibers near by and having a diameter or width two to three times that of the muscle fiber. The length was

two, three or four times its width, but there was some obliquity to the section thus shortening its real length.

The stippling was due to the nuclei of the sporoblasts which were slightly larger than those encountered in my first case, but much smaller than those of the sarcocyst of the sheep, hog, horse or rat, and on the whole were of the small type which I have described from the opossum, hawk, guinea-pig and man (Darling, 1915). There was no evidence whatever of degeneration or inflammatory change, not even the slightest in the neighborhood of the sarcocysts.

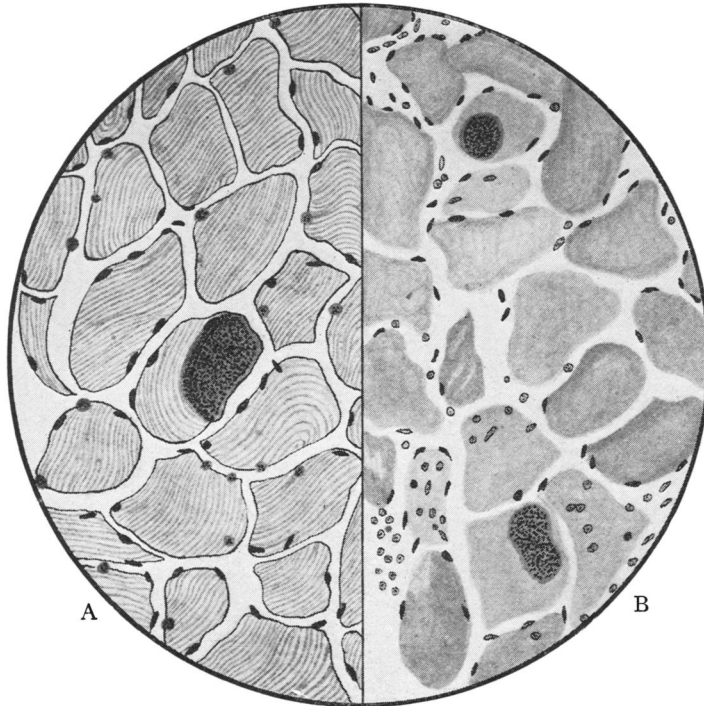


Fig. 2.—Section of muscle, Case 1, J. H.; part (A) represents a piece of muscle taken July 2; part (B) represents a fragment removed July 13. The necrosis of the fibers and the cellular changes are due to typhoid fever and probably not to the presence of the sarcocyst.

DISCUSSION

Nothing is known of the man's habits previous to his admittance to the hospital. He had been an estate coolie and a bullock cart driver. He was also a mohammedan. From this we can state that like most East Indians he was practically a vegetarian, and that his diet consisted almost wholly of boiled rice, milk, some fruit and occasionally though rarely a bit of goat's flesh, chicken or fish. Meat could be almost entirely put out of his dietary. In our ward he got chicken, rice and

milk. There is no likelihood of his ever having tasted or eaten raw meat or fish. The source of the infection then is unknown.

Scott has published some interesting work on the epidemiology of sarcocyst infection in sheep and it is to be hoped that the natural mode of infection of this parasite will before long be cleared up.

Scott's recent paper (1918) on the seasonal incidence of sarcocyst infection in Wyoming is suggestive of the possibilities for the truth of my view that sarcosporidiosis as well as leishmaniasis and certain other infections are examples of parasitological blind alleys, and that sarcosporidiosis is very likely an infection by some sporozoon, very likely Neosporidia derived from insect or invertebrate through the contamination of food or drink, directly or indirectly, through droppings, and that the sporozoon after gaining the musculature of its strange host is unable to continue further its life cycle and escape from a compromising position.

PAPERS CITED

- Baraban and St. Remy, 1894.—Sur un cas de tubes psorospermiques observés chez l'homme. *Compt rend. soc. biol., Paris, (X)*, 1:201-202.
- Darling, S. T., 1909.—Sarcosporidiosis with Report of a Case in Man. *Arch. Int. Med.*, 3:183-192.
- 1915.—Sarcosporidia Encountered in Panama. *Jour. Parasitol.*, 1:113-120.
- Scott, J. W. 1918.—Notes and Experiments on *Sarcocystis tenella* Railliet. *Jour. Parasitol.*, 5:45-60.